

# The Making of Native Hats

WHEN a tourist lands in Hawaii the first thing he or she does—after brushing the blood-thirsty mosquito off his or her nose—is to buy a native hat.

Whether there is aught of beauty in these hats is for the individual to decide for himself, but they have much attraction for the newcomer and the aboriginal kamalaia.

Few, however, of those who sport the island hats ever see them made. Yet within five minutes' ride of the court house is a little village whose people all day long sit and weave them and where picturesque poverty and queer habits may be studied at leisure.

To reach the odd settlement, one may go to the Healan boat house and then follow the seawall for a quarter of a mile toward Diamond Head. The place is generally known as the South Sea Island village and its thirty dwellers are from some far away knoll in a tropical ocean. They have squatted on the beach and tolerated by the owners of the land have made crazy houses of the flotsam and jetsam of the harbor.

Their huts are roofed with old pieces of tin and the sides are freely open to the breeze. But in peace and pleasure they spend their waking hours—the men fishing and the women always weaving.

## NATURAL WEAVERS.

Born weavers of hats and mats are nearly all the inhabitants of the islands of the Pacific. With a wealth of material these people of unique ideas and deft fingers weave strands of fiber, ferns, grasses and stripped stalks into the oddest possible conceits.

Nowhere in the world but in the islands of the South Seas, in the archipelagos of the China Sea and in the Straits Settlements, and especially in Hawaii, can almost every green thing that grows in the earth be utilized to such practical ends. From the grasses that spring up near the sea shore to the scraggy bushes that grow near the summits of the highest mountain ridges, the Hawaiian makes use of all that grows above and below ground. If it cannot be eaten it can be woven into something that will clothe them, or else make a pretty decoration. And what cannot be used for human beings the Hawaiians throw to their beasts of burden or fowls.

But the art of making hats is one to which the natives seem particularly adapted. From a few ugly strands of tough grasses, from the delicate fibers taken from the inside of a pumpkin vine, or even from the stem of the dainty maiden-hair fern, hats of the fairest type imaginable when polished with oil on my lady's head, are made. The Hawaiians work swiftly and easily in their weaving. The strands are braided with unerring accuracy and the inches grow rapidly into fathoms almost before the watcher comprehends the methods employed.

## MANY VARIETIES.

There are hats for men, hats for women, and hats for children. The styles may be a trifle out-of-date according to the New York or Paris modes, yet those who wear them contrive to make them becomingly attractive. But it is in the varieties of hats that the makers show their skill. From fifteen to twenty kinds are made and sold without difficulty. During the reign of King Kalakaua hats made of the quills of the peacock were much worn. Hundreds of quills were required in the making of a single hat and infinite care and patience exercised in bending the quills in such a manner that the contour of the crown was perfect. They were handsome and the headgear and the wearers had to pay a goodly price. As high as \$20 and in some instances much more, used to be paid for them. That was when peacocks were more plentiful in the Islands than at present. Such hats could hardly be made now for less than \$25.

Then there is the maiden-hair fern hat made from the stems of the pretty fern which housewives delight in fostering. These are small and exceedingly brittle when dried and are rather most difficult to manufacture into headwear. The stems have to be wound about with thread at short intervals in order to secure the crown contour. When completed they are quite heavy and cannot be subjected to rough usage. Hats of this kind have recently sold for \$14 each. Then the prices dwindle down to as low as \$1.50. It is chiefly the latter hats that find the largest market both in Honolulu and on the Mainland. Within the past year it was the fashion to wear a hat on the Mainland for golf, driving and outing wear. California was alive with the native hat and the coming year promises to be equally favorable to them. Wound about with a purgaree of parti-colored silk and lined upon the hair with pins made of the old Hawaiian coins, the Hawaiian hats are always certain to attract much attention.

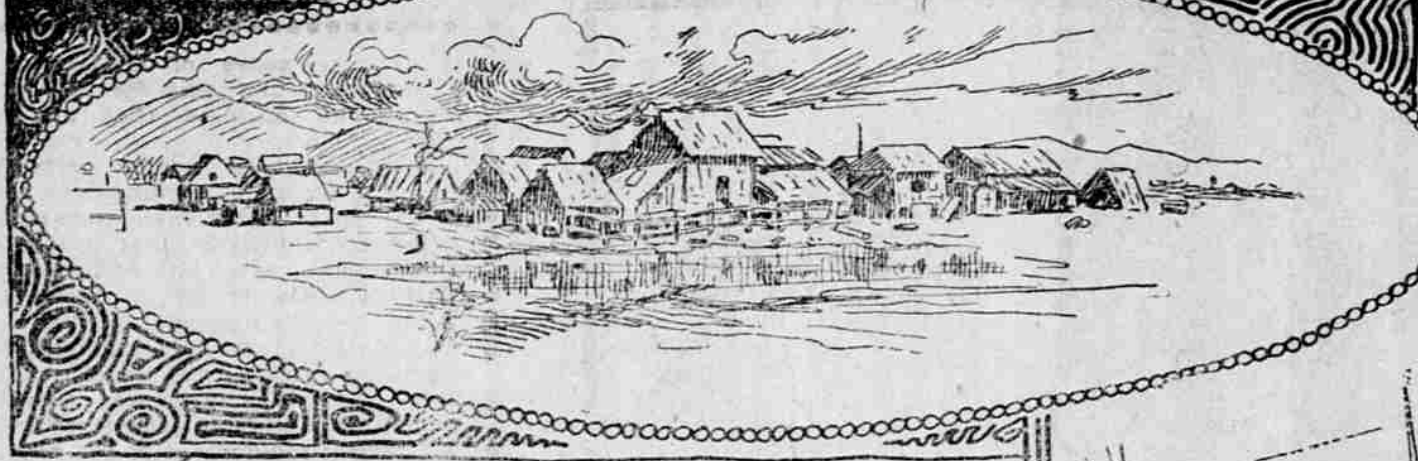
## SOME COME HIGH.

Thirteen varieties to choose from are almost enough for those hardest to please. Today there are that many kinds of hats made by Hawaiian weavers. It only depends upon one's purse whether one shall have a lauhala hat which can be bought for \$2 or at the most \$3, to the peacock quill hat at \$25. The prices range as widely as the varieties.

There are only two ways of making the Hawaiian hats. One of them is to take a number of strands and weave a braid of about ten or fifteen fathoms, which is usually sufficient to make an entire hat, crown, brim and all. A day and a half are generally employed to make a single braid, although a rapid weaver can make it in less time. It seems a pleasant pastime and is very fascinating to an onlooker. When the Hawaiian women weave they throw all their skill into their work and few mistakes are made.

A weaver sits on the floor of her house

## THE SOUTH SEA VILLAGE AT KAKA'AKO



AN OLD WEAVER

on a small mat which has been woven by her. Placed in front of a little to the right of her is a gourd, or bowl, filled with fresh water, into which she continually dips her fingers to keep the straw moistened. At her left is a bunch of straws, tied together loosely with a string of some soft fiber all ready to supply her braid as she weaves. These straws have been stripped finely to a required size with a needle.

In starting the strand she holds the braided or finished portion toward her and the straw in the opposite direction. As the straws keep moving rapidly through the fingers and the braid grows in length it falls into the lap until it is a fathom long, when it is tied together with a soft string, and the weaving is then continued until fathom after fathom is made. After the braid has become a fathom long the native woman holds it under her knee in order to keep it firm and even. When the braid is completed it is sewn into whatever shape is desired.

## TAKES A SKILLED HAND.

Then there is another way to make the popular native hats, commonly worn by Hawaiians and haoles alike upon the streets, and which the tourists love so well to don. It is made in the same manner as the Panama hat, over a round or oval block of wood. It is necessary to hold the straw on to this block while the weaving goes on, in order to give the hat the proper shape.

The kouana, or strands, of the le, or straws, is commenced from the center of the crown, as a round table mat is made. Additions are made until the crown is of the right size, and then the balance of the hat is woven with this number of strands and no more. The edges of the flat crown are moistened and the sides are shaped by weaving around the block until it is nearly three inches deep. Then more straw is added in order to widen and spread the bottom to make the required brim. At the bottom of the crown where the hat-band should be, a fine string is run through to hold the shape and size of the hat and to divide the crown from the brim. These hats are only made from the fan palm leaves of Kona, Hawaii, the cocconut palm leaves, the lauhala or pandana leaf, and the makaloa, a fine rush which is used chiefly for the making of the Nihau mats that are so expensive, but as a hat it is the cheapest sold.

## KONA WOMEN NOTED WEAVERS.

The fan palm hat is known as the Kona hat, and is quite expensive. The women of Kona are noted for their skill at hat-weaving, and whether it is the handsome and costly fan palm or the plebeian lau hala hat, it is beautifully made.

The cocconut, or lau niu, hat is more generally known as the Lahaina or Maui hat, for cocconuts abound there and a large hat-making industry has grown up on the island. Each steamer from Lahaina brings a number of hats to this port and all find a ready sale. But the cocconut and pandana hats are made all over the group. Here in Honolulu a number of women are kept busy trying to supply the demands of the market.

## HATS OF PEACOCK QUILLS.

The peacock quill hat is snow white and

glistens in the sun as if made of strands of pearls. It is one of Hawaii's choicest hats, for peacocks are not numerous on the islands and it takes no less than 400 quills to make two hats. It is also a difficult task to split the quills and afterward trim the quills evenly with a pair of scissors.

The quill is taken and shorn of its feathers. It is then split and scraped on the inside. Two qualities of quill braid are derived by this process. The upper portion or back of the quill is the choicest braid of the two, for it has a pearly, satin finish. The braid made from the under portions of the quill does not contain the same glossy finish, although it makes a beautiful white hat. There is one feature about these hats which appeals to the wearer, and that is that it never discolors. When soiled, it is easily cleaned by a cautious use of soap, water and a brush.

## SOMETIMES BOTH SIDES OF THE QUILL ARE WOVEN TO MAKE A BRAID.

The effect is not so beautiful, but it takes but 200 quills to complete a hat by this method. In former days when peacocks were more numerous it cost but \$1.50 for 100 quills. The most expensive feature in connection with the hat is the weaving, for the native has to trim both sides carefully with scissors. They cannot be torn off with a needle, as are the strands of the sugar cane and others. The work is also very hard on the fingers. Twelve dollars to fifteen dollars is usually the cost of a braid alone to make up into such a hat. The braids are made with a pretty pearl finish, or a loop. The Hawaiians call it the Hui. No ordinary hand can shape such a hat.

## THE PUMPKIN FIBER HAT.

Such a head covering is not made from the pumpkin itself but from the vine. The native hat-maker cuts away three or four joints from the end of the vine and casts them aside for they are too young for use. Four more joints are then made. A large quantity from different vines are so cut. Each joint is then cut and sliced separately. A smooth, clean board, a bucket of water and a knife are the only materials used in the cleansing process. The green meat is scraped from the stalk, leaving a tough white tissue with green veins. This is thrown into the bucket of water and left standing over night. Each day for four days the tissues are scraped until all the green veins and meaty substances are gone. Fresh water is used each day.

After being thoroughly cleaned it has the appearance of a piece of white silken gauze. As each strand is rinsed it is thrown on a sheet of clean paper, where it dries quickly. If it is not as white as the weaver wishes it, a few drops of blue ink are dropped into a basin of fresh water, making a light blue shade. The strands are placed in the basin, and left standing for a short period. Each strand is then picked out and run through the fingers and then thrown on a sheet of white paper to dry. A needle is used to strip it into smaller and very fine strands for weaving. The straw is very limp, though tough and weaving is necessarily quite slow, for it is extremely soft. When the braid is completed it is generally sewn on a frame, that is, if intended for a lady's hat; but if for a

ment lands have been cared for by about 65 foresters and 100 subordinates, and the regulations have been on the most scientific European model. With usual Spanish laxity in administration, however, chief attention has been given to collecting licenses and other revenues.

Composite photographs, combining many pictures so as to get a type face, were brought out nearly twenty years ago by Francis Galton, F. R. S. He now advances the opposite idea of analytical photography, and aims to record what is individual in the expression, and the regulations have been on the most scientific European model. With usual Spanish laxity in administration, however, chief attention has been given to collecting licenses and other revenues.

An interesting bit of our planet's story is read in Moissan's electric furnace. The metallic carbides produced are like those of the sun and stars and it is thought that such compounds—largely decomposable by water—once held the world's carbon. When cooling formed water, the carbides were decomposed, forming hydrocarbons. Oxidation gave carbonic acid, then vegetable, followed by animal, life became possible.

The perfumes of flowers are best obtained by distillation, but where high temperature changes the substance the usual process is encephalation, or absorption with fats. Separation by solvents has required costly apparatus. But a new factory at Frejus, France, claims to use carbon disulphide, acetone or petroleum ether in very simple apparatus, consisting of a tank for the solvent, one for the flowers and a third for the solution, with steam worm, condensing worm and pump. The steam heat gently distills off the solvent, leaving an extract 100 times as strong as encephalation pomade.

Flexible lithographic plates are made by Theodor Koehler by coating thin sheets of wood, celluloid, pasteboard or other material with a paste-like mixture of kaolin, zinc white and water glass. The dried surface is found suitable for receiving the lithographic designs.

Curious and striking is the new electrical vacuum phenomenon of E. Ruh-

mer. The air is pumped from a glass tube about 3 feet long and 1 1/2 inches wide until a discharge from a 12-inch induction coil just forms a spark of 6 inches through the air in preference to the tube. On passing a street current of 110 volts, broken by a Wehnelt interrupter, a thick red stripe extends throughout the length of the tube. When the current is reduced by suitable resistance the stripe breaks up into glowing patches, and if the tube is held upright, with the anode uppermost, the patches group themselves into a spiral, which slowly turns around on its axis, making a revolution in almost 7 seconds. The wave line of rotation appears to descend. The screw is usually about an inch in diameter and left-handed, but is sometimes smaller, and is then right-handed, the pitch varying with current and rate of interruption.

The murmur of a distant waterfall, the patter of raindrops on the roof and other rhythmic vibrations produce a soothing effect upon the nervous centers that may deepen into actual anaesthesia. Among striking examples recorded by Dr. B. F. Ward is that of a

very tired workman who, sitting down to rest a moment on a railway cross-tie, was lulled into unconsciousness by the vibrations of an approaching train, and only awakened many hours afterward, when he found that his left arm had fallen over the rail and been crushed. It is concluded that the vibrations must be uniform, rhythmic and steadily increasing in force, and that a suitable metallic operating table with vibrating wheels should give harmless anaesthesia as profound as that from chloroform.

In the unique observation of Chaplain J. T. Bird of the British army the zodiacal light and the moon were seen together, within 48 hours of new, being

lively luxury. It costs 25 cents a fathom for weaving it alone. It is commonly called the Kaula or Nihau hat.

## THE PAMOHO HAT.

This is made from the pamofo fern and is very much like the maiden-hair fern hat when finished, although a trifle coarser. It is made in the same way and the ferns are found in the same places. It is not so expensive as the other, but makes almost as handsome an appearance. The pamofo and sugar cane straws woven together make a pretty effect. The

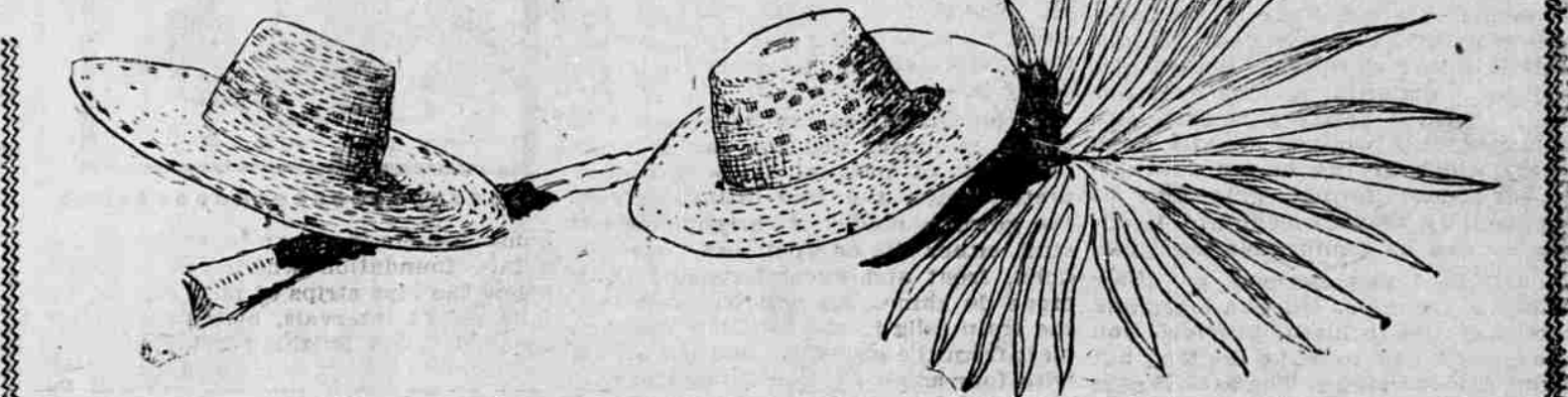
to bunches and ready for weaving. The common braid takes seven strips for weaving, and nine or twelve fathoms are generally required for a man's hat. The fingers of the weaver are dipped continually into a bowl of water to keep them moist, otherwise the straws will break.

## A BAMBOO STRAW PILE.

This is one of the prettiest of Hawaiian hats. The bamboo is cut when about half grown. Every joint is cut and split on one side. This is flattened out by exposing it to the sun for a day or two.



MAKING THE HATS



man's hat it is sewn upon another straw which acts as a frame. When finished the hat, according to feminine terms, is "exquisite," and as light as a feather. It cannot stand much wear for it is easily scorched by exposure to the sun.

Beautiful artificial flowers are also made from the pumpkin straw. In the early 'seventies the late Dr. Hoffmann, one of the old kamalaia, sent one of the hats and a spray of flowers to the Berlin Exhibition and it took the first prize, a gold chain and a locket with a pearl. It was forwarded to Dr. Hoffmann, who presented it to the lady who weaved the hat. The braid alone for the pumpkin straw hat costs about \$5.

## EKAHA OR BIRD-NEST HAT.

The natives strip the leaves leaving only the center, or blade. The outside of this is peeled away and thrown aside. It is subjected to a second peeling. This peeling is saved and also the under portion. They are then dried in a shady place. With a pair of scissors the strands are trimmed even, and then they are ready for the weaving process. The lower portion of the blade is a dark brown and the middle strip is of a golden brown hue. When the two colors are woven together a beautiful effect is produced.

## INA-INA, OR MAIDENHAIR FERN.

The ina-ina, or maiden-hair fern, hat is the queen of the brown hats and is considered by many connoisseurs the choicest hat in Hawaii. It takes a great many stems of the dainty maiden-hair fern to manufacture a single hat, for they are not more than nine inches in length and the braid has to be joined quite often as the weaving goes on. Furthermore it is not so pliable as other straws and strands.

The strands are kept moistened continually until the braid is finished. The fern is stripped of its leaves. These are laid out in a shady place and gradually dried for a few days. When quite dry they are placed on a smooth board and a damp cloth placed upon them with which the stems are flattened. A knife is also used which cleans it thoroughly. A number of stems are bunched and wrapped in a bit of damp cloth to keep them soft.

When sewn into a hat, it presents a beautiful appearance. Being a heavy hat they are made almost entirely for men. The maiden-hair fern grows chiefly in ravine and near waterfalls and usually in places difficult to reach. It is also found near the beach at Kahuku, where it grows in a shady dell in abundance. Most of the ferns for hats come from the Islands of Kaula, where they grow in the mountains. The hat is an expensive

ina is another brown hat made from a fern of the same name.

The makaloa hat is manufactured from a fine rush about an eighth of an inch in width. It grows in swampy places and the hat has a coarse finish. It is, however, one of the most durable, and was made mostly for school-children's use in former years. It is not used to a great extent nowadays. It sold for 50 cents. The rush is dried and flattened and then woven about a block.

## A REAL KONA HAT.

The loulu, or fan palm, hat is made at Kona, Island of Hawaii, from the young leaf of the palm. It is cut from the tree and dried in the sun for about a week. It is then placed in salt water and again dried. This operation is repeated four or five times. It must be dried in very hot weather, for the hotter the sun's rays the whiter the palms will bleach. Great care is exercised by the natives not to allow them to become wet by rain or dew, for mildew comes quickly. The palms are torn into fine strips with a needle and the strands are then woven over a block beginning at the crown and shaping it as the weaving progresses. The hat is sold for from \$1.50 to \$5 and is superior to the lau hala hat. It is similar to the Panama, except that it is of a creamy color.

The ha ko, or cane leaf, hat is made from the center or blade of the sugar cane leaf and is of a creamy, satiny finish. The leaf is torn away from the blade and the soft fiber scraped away from the vein with a knife, leaving only the glossy side. This is dried and then split into strands fine enough for braiding. The hat is very pretty.

## PUA KO OR SUGAR CANE HAT.

The cane blossom stalks are split in half and the fiber scraped away with a knife. The stalks are then tied up in large bundles and coiled from one end into a roll. It is again tied and thrown into hot water and left to boil until the stalks look yellow. They are taken out and untied and placed in cold water for half an hour. They are then dried thoroughly for many days until thoroughly dry. By this means the straw is brought to a light color. The sugar cane stalks must be cut before the blossoms are quite open, so that the straw will be of a light color. When the blossoms are in full bloom the stalks are much harder and break easily, and are very much discolored. After the stalks are dried they are again subjected to a knife scraping to remove the remaining fiber. With a needle the stalks are then torn into very fine, even strips. Then they are tied in

A pickle of lime juice and water quite strong is used, for if too weak it will not soften the bamboo. If too strong it will discolor it. The beauty of this hat is in its being of a dead white color. A weaver also has to be extremely watchful of the length of time the bamboo is subjected to its lime juice bath. The outer skin must be stripped before being split. After coming out of the pickle the bamboo is peeled into two or three slices. The fiber is scraped off until it is smooth and of a certain thickness. After that it has to be dried in a shady place. The fiber is placed on a board and worked over with a knife. The bamboo fiber is very sensitive and will take the color of any paper it is wrapped in. Tahitians and Hawaiians always use blue paper. The hat was first made in Tahiti. Very often the black stalk of the hill banana is mixed with the white bamboo, making a novel black and white effect.

## THE LAU HALA OR PANDANA.

The young leaf of the hala is used for this hat. It is boiled, then dried, and afterwards scraped until quite smooth. They are then coiled into rolls. It is woven over a block. There are two species of the hala—the white and the red. The red hala makes the rich brown hat which is generally sold for about \$20. The white hala is a little cheaper. Like the cocconut hat it is very popular and has become the fad. It was formerly sold for \$1.50, but the fad carried the price up. The white and brown hat made from the cocconut and hala leaf is a favorite with the tourists and generally sells for \$2. It is usually trimmed with a brown braid band, or purgaree, an illima lei, or feather wreath made from the peacock, pheasant and other island birds, dyed yellow to imitate the royal wreath.

## THE COCOANUT FIBER HAT.

This is made in the same way as the hala or pandana. Sometimes the leaves are dyed by burying it in a tar patch mud, which turns it to a dark gray shade. Again the dry leaves are used, which makes it a brown hat. The hat is a favorite with the tourists and generally sells for \$2. It is usually trimmed with a brown braid band, or purgaree, an illima lei, or feather wreath made from the peacock, pheasant and other island birds, dyed yellow to imitate the royal wreath.

In the unique observation of Chaplain J. T. Bird of the British army the zodiacal light and the moon were seen together, within 48 hours of new, being lighted only by earth's sun. This indicates great transparency of the South African atmosphere and that the zodiacal light is beyond the moon.

## Scientific Miscellany

The forests of the Philippines are thought to contain about 500 species, more than 400 being now known. There are 87 species of palms, 22 of the oak family, including two oaks, and 9 conifers, with only one true pine—the last named growing in a dense forest above a height of 4,000 feet in the island of Luzon. At least 50 species are valuable. One of the most important is the yang-yang tree, yielding a much-prized oil; but others furnish cocconuts, gutta-percha, varnish, many dye woods and some fine hard woods. A system of forestry has existed 35 years. Between 20,000,000 and 40,000,000 acres of govern-